SECTION 211 - JOINT/CRACK SEALING

1. SCOPE

The work covered by these specifications consist of furnishing all labor, equipment, and materials in performing all operations necessary in connection with the application of a joint/crack sealant in complete and strict accordance with these specifications.

2. DESCRIPTION

This work shall consist of the application of a hot-pumped joint/crack sealant in accordance with these specifications. The work under this item consists of the cleaning and sealing of joints and cracks 1/8 inch in width or greater with asphalt reinforced with polyester or polypropylene fibers as directed by the Engineer and hereinafter provided.

3. MATERIALS

The joint/crack sealant shall consist of a blend of 5.0% minimum by weight polyester or 7.0% minimum by weight polypropylene fibers with asphalt cement. The asphalt cement shall be Type AC-20 grade and conform to the requirements of the 1990 Edition of the Kansas DOT standard materials specifications, Subsection 1201 entitled "Asphalt Cement and Cutback Asphalt".

The polyester fibers (such as "Petroflex" manufactured by GFC Materials Co., Apalachin, N.Y.) shall meet the physical properties listed below:

Length- - - - - - - - - - - - - - - - - - 25" plus or minus 0.13"
Crimps- - - - - - - - - - - - - - - - - -None
Tensile Strength - - - - - - - - - - -70,000 psi, minimum
Specific Gravity - - - - - - - - - - - 1.34

The polypropylene fibers (such as "Fiber Pave 5010" manufactured by Hercules Inc., Wilmington, Delaware) shall meet the physical properties listed below:

Length - - - - - - - - - - - - - - - - - - 0.39" plus or minus 0.08"
Crimps - - - - - - - - - - - - - - - - - -None
Tensile Strength - - - - - - - - - - - 40,000 psi minimum
Specific Gravity - - - - - - - - - - - -0.91

4. PREPARATION OF SURFACE

All joints and cracks to be sealed shall be cleaned of all foreign material with oil free compressed air. Compressed air shall be 90 psi minimum at the nozzle. Contaminants on the surface adjacent to the joints and cracks shall also be removed. At the time of placement of the sealant, surfaces to be sealed shall be dry and the ambient temperature shall be above 40° F.

5. EQUIPMENT

All equipment, tools, and machines used in the performance of this work shall be maintained in satisfactory working order at all times.

The joint sealing machine shall be fully capable of production of crack filling mixes

incorporating the use of polyester or polypropylene fibers. The machine shall be capable of applying the product at a high pressure (100 psi) through one or more applicator wands.

The asphalt material is to be heated indirectly by a heating oil chamber. Automatic temperature controls and an automatic safety shut-off system shall be used. The tank must be capable of recirculating the heating oil.

The unit shall be equipped with all lights necessary for safe and legal operation on public roads.

Dial-type temperature gauges shall be mounted so as to allow monitoring of the temperature of the product in the tank and the heating oil. The tank shall be insulated.

The mixing shall be accomplished by a paddle-type agitator. Direction of rotation and speed of the auger or paddles are to be controlled hydraulically.

6. TRAFFIC

Traffic shall be maintained at all times. Suitable methods such as barricades, flagmen, and others shall be used to protect the sealant/membrane from all types of traffic. The Engineer shall give final approval as to the methods of traffic control used. The Contractor at no cost to the Owner shall repair any damage to the uncured sealant/membrane surface. Traffic control shall be as per the Manual of Uniform Traffic Control Devices, using flagmen at all times. If the distance between the beginning of the operation and the uncured sealant exceeds 200 feet, then additional flagmen may be required on higher traffic streets.

7. MIX AND APPLYING MATERIAL

The material shall be thoroughly blended for no less than 15 minutes with agitator and circulating pump on full circulate. Operating temperature in the kettle should be between 250° - 280° F. (polypropylene) and 320° - 350° F. (polyester) and at no time shall exceed 290° F. (polypropylene) and 375° F. (polyester). If the temperature of the material is allowed to exceed these limits, then that material is unacceptable and must not be incorporated into the project.

The sealant shall not be applied at a temperature less than 255° F. (polypropylene) and 325° F. (polyester). The sealant/membrane shall be placed on all roadway cracks greater than 1/8" wide as directed by the Engineer. The sealant/membrane shall be installed in a one-step extrusion process with the overlay membrane 3" to 5" wide and shall be centered over the joint or crack within a one-inch tolerance, utilizing a special disc-shaped applicator. The crack shall be completely filled to its full depth and a water-proofing membrane approximately 1/8" thick (1/16") shall be formed on the pavement surface.

A piece of steel bar stock will be laid across the membrane and the thickness measured before opening to traffic. Thickness measurements will be averaged for work accepted and completed at the end of each day.

Traffic shall not be allowed under normal conditions on the sealant until it has cured and the possibility of tracking does not exist. Dust with fine aggregate if necessary to prevent pick up of the sealant if traffic is allowed on the pavement prior to proper cure time. The Engineer will determine, in conjunction with the Contractor, when this condition exists.

8. QUALITY CONTROL

The sealant manufacturer's technical representative shall be notified by the Contractor and shall be responsible for product quality. The manufacturer's representative shall be present during the initial installation. Operations and procedures, which are considered by the representative as being detrimental to the effectiveness of the sealant, will not be permitted.

9. PUBLIC SAFETY

The Contractor shall maintain lights, signs, and barricades for the protection of the work and for the safety and convenience of the travelling public.

10. WEATHER LIMITATIONS

No material shall be applied unless the atmospheric temperature is 40° F. and rising nor when the temperature has been below 35° F. in the preceding 24 hours. No material shall be applied while the surface is wet nor when the impending weather conditions are such that proper curing may not be obtained.